

FINAL

SWMU Assessment Report

Evaluation of 56 Septic Tank Systems

Marine Corps Base Camp Lejeune
Jacksonville, North Carolina



Prepared for

Department of the Navy
Naval Facilities Engineering Command
Mid-Atlantic Division
Norfolk, Virginia

Contract No.
N62470-02-D-3052
CTO-100
Navy Clean III

March 2006

Prepared by

CH2MHILL

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Acronyms

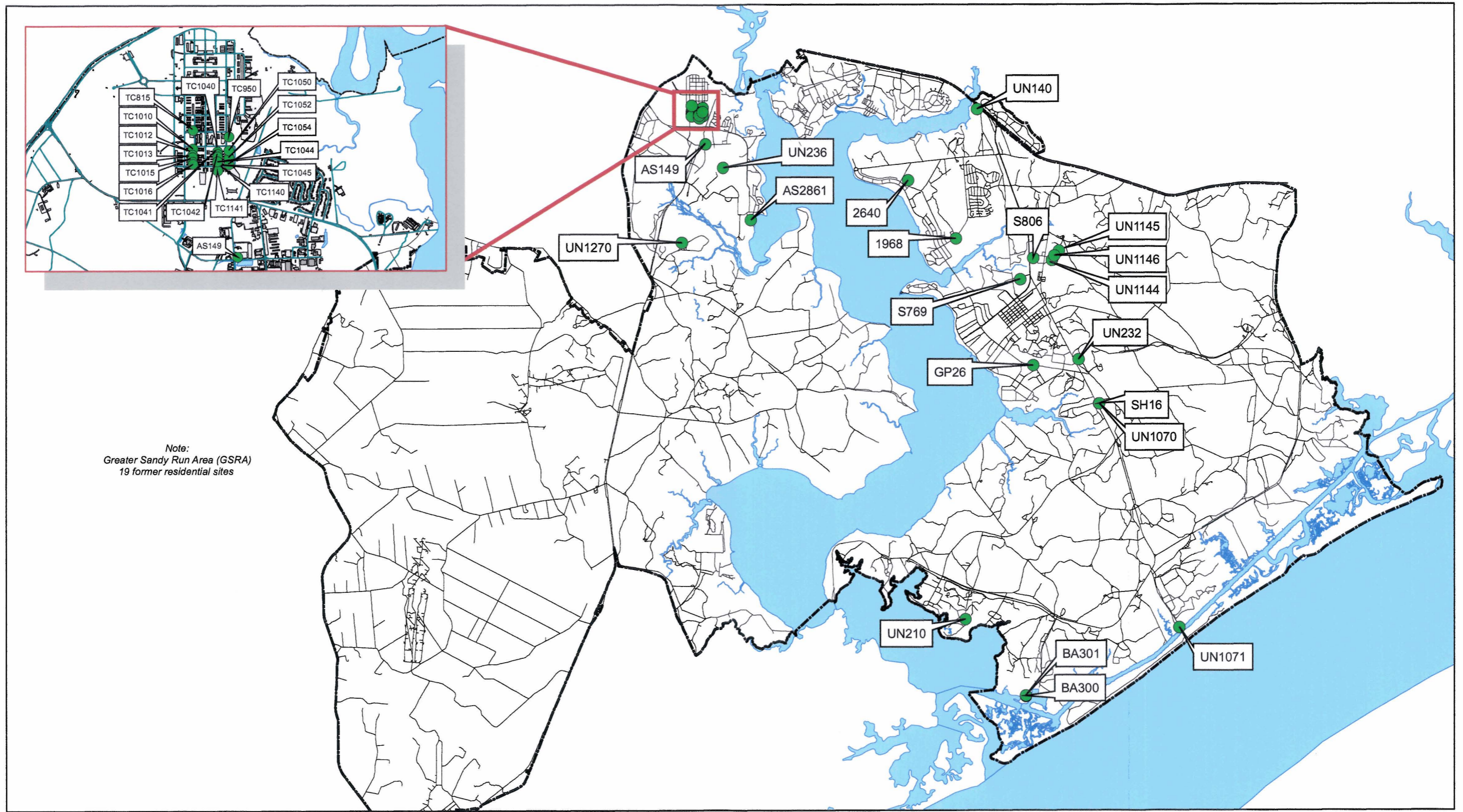
AST	Above-Ground Storage Tank
CDD	Camp Devil Dog
CLEAN	Comprehensive Long-term Environmental Action Navy
CTO	Contract Task Order
GSRA	Greater Sandy Run Area
IR	Installation Restoration
IRA	Interim Removal Response Actions
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
NAVFAC	Naval Facility Engineering Command
NCDENR	North Carolina Department of Environment and Natural Resources
OU	Operable Unit
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyl
SAR	SWMU Assessment Report
SWMU	Solid Waste Management Unit
UN	unnumbered number

1.0 Introduction

This Solid Waste Management Unit (SWMU) Assessment Report (SAR) presents the findings of a file review of septic tank system usage at 56 sites on MCB Camp Lejeune, North Carolina (Figure 1). The 56 sites relate to septic systems at razed structures, and are under consideration to be classified as SWMUs. The sites include a wide variety of facilities scattered across the Base and also include 19 former civilian residential parcels that are located in the Greater Sandy Run Area (GSRA). The complete list of facilities reviewed is included in Table 1. Figure 1 presents the locations of 37 of the sites; the GSRA sites are not shown on the figure.

After review of the readily available files and design drawings, it was determined that 51 of the septic systems were utilized for disposal of sanitary waste only. These sites were designated as public toilets, latrines, or residential structures at GSRA. Plumbing fixtures at these sites included toilets, sinks, and in some cases, shower facilities. The remaining five septic systems were not supported by readily available documentation to allow for an immediate determination of whether or not they received wastes other than sanitary wastes.

This SAR was prepared by CH2M HILL under the Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic Division, Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract N62470-02-D-3052, Contract Task Order (CTO) 100. The SAR was prepared for submittal to NAVFAC, MCB Camp Lejeune, and the North Carolina Department of Environment and Natural Resources (NCDENR).



- Septic Tank
- Surface Water
- ▭ Installation Boundary
- ▭ See inset for greater detail



Figure 1
General Site Map
Camp Lejeune Marine Corps Base
North Carolina
CH2MHILL

TABLE 1

Initial List of 56 Razed Structures

Septic System Number	Description	Septic System Number	Description
1968	Toilet Stone Street	GSRA 001	Structure At GSRA
2640	Toilet	GSRA 004	Structure At GSRA
S769	Ticket Booth at Entrance	GSRA 011	Structure At GSRA
S806	Toilet @ Lot 201	GSRA 014	Structure At GSRA
BA300	Toilet at Mile Hammock Bay	GSRA 016	Structure At GSRA
BA301	Toilet at Mile Hammock Bay	GSRA 033	Structure At GSRA
GP26	Latrine	GSRA 042	Structure At GSRA
SH16	Toilet	GSRA 049	Structure At GSRA
TC815	Latrine	GSRA 051	Structure At GSRA
TC950	Latrine	GSRA 056	Structure At GSRA
TC1010	Latrine	GSRA 057	Structure At GSRA
TC1012	Latrine	GSRA 074	Structure At GSRA
TC1013	Latrine	GSRA 075	Structure At GSRA
TC1015	Latrine	GSRA 079	Structure At GSRA
TC1016	Latrine	GSRA 085	Structure At GSRA
TC1040	Latrine	GSRA 128	Structure At GSRA
TC1041	Latrine	GSRA 133	Structure At GSRA
TC1042	Latrine	GSRA 139	Structure At GSRA
TC1044	Latrine	GSRA 147	Structure At GSRA
TC1045	Latrine	UN1070	Septic TK/DN FLD SH16
TC1050	Latrine	UN1071	Septic TK/DN FLD (BA area)
TC1052	Latrine	UN1144	Septic TK/DN FLD (824)
TC1054	Latrine	UN1145	Septic TK/DN FLD (849)
TC1140	Latrine	UN1146	Septic TK/DN FLD (827)
TC1141	Latrine	UN1270	Septic TK/DN FLD (UN1187)
AS149	Septic Tank (AS143)	UN140	Septic TK/DN FLD (45)
AS2861	Septic Tank (AS2860)	UN210	Septic TK/DN FLD (CHB)
UN236	Septic TK/DN FLD (AS536)	UN232	Septic TK/DN FLD (FC19)

2.0 MCB Camp Lejeune Description

MCB Camp Lejeune is located on 236 square miles of land in Onslow County, North Carolina, adjacent to the southern side of the City of Jacksonville. Jacksonville is the largest city near the MCB Camp Lejeune and contains approximately half of the county's total

population. Since 1990, much of the MCB Camp Lejeune complex has been part of Jacksonville. The areas adjacent to the MCB are generally rural.

The MCB is bisected by the New River, which flows into the Atlantic Ocean in a southeasterly direction. The MCB is bordered by the Atlantic Ocean to the east, U.S. Route 17 to the West, and State Route 24 to the north. Figure 1 shows MCB Camp Lejeune and the site locations.

3.0 Initial Site Assessment

Initial assessment of the privately owned parcels that were purchased to create the Greater Sandy Run Area (GSRA) began with a review of the Real Estate Acquisition Checklist/Site Inspection Forms (1991), which provided a summary of each property at the time of the acquisition. Information provided on the forms included a Tax Parcel Map, description of structures, wells, septic systems, land use, history, sketches, photographs and a description of potential environmental concerns (if any) of each parcel. Information provided on the checklist forms clearly demonstrated that 17 of the 19 GSRA sites were used for residential purposes only, and warranted no further action. Additional action taken for the remaining two GSRA sites is described in Section 3.1 of this report.

The initial assessment process for sites on other areas of the Base began by searching for construction drawings, floor plans and demolition plans from the Base Facilities office and Real Property Office. To provide additional details, property disposal records were also obtained from the Installation Development Office. Since the majority of the sites were referenced by a building number, records and drawings were readily available. Information contained in the combination of drawings, photographs and written records, clearly demonstrated that many of the sites were used for disposal of sanitary waste only, and warranted no further action. The remaining sites required additional assessment to determine their usage. Additional details for those sites are provided in Sections 3.3 and 3.4 of this report.

3.1 Greater Sandy Run Area Sites

Nineteen former sites were located within the area currently known as the Greater Sandy Run Area (Table 2). MCB Camp Lejeune purchased these properties from the previous civilian residents during the late 1980s and early 1990s for inclusion in the GSRA training area. Each of the sites consisted of a residential dwelling, septic system and a parcel of land.

Two of the GSRA sites, GSRA 074 and GSRA 075, were previously reported (Real Estate Acquisition Checklist/Site Inspection Forms, 1991) to have supported commercial operations. Base records were supplemented with Onslow County Tax, Permits and Inspections and Environmental Health Department records. None of the records indicated a commercial use of the properties, and septic system permit diagrams showed only residential connections to the septic tanks. Based on the file review of these sites, the septic tank systems at all of these locations are believed to have been used to manage only sanitary waste. Therefore, no further assessment is recommended for any of the 19 GSRA sites.

TABLE 2
GSRA Sites

Septic System Number	Description	Septic System Number	Description
GSRA 001	Structure At GSRA	GSRA 057	Structure At GSRA
GSRA 004	Structure At GSRA	GSRA 074	Structure At GSRA
GSRA 011	Structure At GSRA	GSRA 075	Structure At GSRA
GSRA 014	Structure At GSRA	GSRA 079	Structure At GSRA
GSRA 016	Structure At GSRA	GSRA 085	Structure At GSRA
GSRA 033	Structure At GSRA	GSRA 128	Structure At GSRA
GSRA 042	Structure At GSRA	GSRA 133	Structure At GSRA
GSRA 049	Structure At GSRA	GSRA 139	Structure At GSRA
GSRA 051	Structure At GSRA	GSRA 147	Structure At GSRA
GSRA 056	Structure At GSRA		

3.2 Camp Geiger (Tent Camp) Area Sites

Seventeen former structures were located in the Camp Geiger (Tent Camp) area (Table 3). All seventeen of the structures were restroom facilities associated with the barracks complex.

TABLE 3
Camp Geiger (Tent Camp) Area Sites

Septic System Number	Description	Septic System Number	Description
TC815	Latrine	TC1042	Latrine
TC950	Latrine	TC1044	Latrine
TC1010	Latrine	TC1045	Latrine
TC1012	Latrine	TC1050	Latrine
TC1013	Latrine	TC1052	Latrine
TC1015	Latrine	TC1054	Latrine
TC1016	Latrine	TC1140	Latrine
TC1040	Latrine	TC1141	Latrine
TC1041	Latrine		

Based on the file review of these sites, the septic tank systems are concluded to have been used to manage only sanitary waste from the adjacent barracks. Therefore, no further assessment is recommended for any of the Camp Geiger (Tent Camp) area facilities.

3.3 Other Septic Systems Referenced by Building Number

Ten facilities, listed in Table 4, are identified with standard building numbers and are distributed across the Base. Initially, the usage of AS149 (AS143) was unclear. Additional records were searched to determine the types of waste managed by the septic system AS149. Those findings are included in Section 4 of this report.

Based on the initial file review, nine of the septic tank systems listed in Table 4 are believed to have been used to manage only sanitary waste. Therefore, no further assessment is recommended for those nine facilities.

TABLE 4
Other Septic Systems Referenced by Building Number

Septic System Number	Description	Septic System Number	Description
1968	Toilet Stone Street	BA301	Toilet at Mile Hammock Bay
2640	Toilet	GP26	Latrine
S769	Ticket Booth at Entrance	SH16	Toilet
S806	Toilet @ Lot 201	AS149	Septic Tank (AS143)
BA300	Toilet at Mile Hammock Bay	AS2861	Septic Tank (AS2860)

Highlighted sites are discussed further in Section 4

3.4 Septic Systems Referenced by Unnumbered Numbers

Ten septic systems (Table 5) were referenced with "unnumbered number" (UN), which refers to utilities, underground structures, training facilities, etc. Most of these septic systems are also referenced to a building number, but some of them are referenced to an area of the Base, or to another UN. Researching the UN facilities required extensive file review efforts, especially when there was no associated building number.

TABLE 5
Septic Systems Referenced by Unnumbered Numbers

Septic System Number	Description	Septic System Number	Description
UN236	Septic TK/DN FLD (AS536)	UN1146	Septic TK/DN FLD (827)
UN1070	Septic TK/DN FLD SH16	UN1270	Septic TK/DN FLD (UN1187)
UN1071	Septic TK/DN FLD (BA area)	UN140	Septic TK/DN FLD (45)
UN1144	Septic TK/DN FLD (824)	UN210	Septic TK/DN FLD (CHB)
UN1145	Septic TK/DN FLD (849)	UN232	Septic TK/DN FLD (FC19)

Highlighted sites are discussed further in Section 4

Initially, the usage of four of the ten facilities (UN236, UN1270, UN140 and UN232) was unclear. Additional records were searched to determine the types of waste managed by these four septic systems. Those findings are included in Section 4 of this report.

Based on the initial file review, the six remaining septic tank systems are believed to have been used to manage only sanitary waste. Therefore, no further assessment is recommended for those six facilities.

3.5 Initial Assessment Summary

During the preliminary record search, it was determined that 51 of the sites did not require assessment. Those sites were clearly utilized for sanitary purposes only, and will not be considered further in this report.

Additional information regarding the five remaining sites is presented in Section 4.

4.0 Site Descriptions

The five remaining sites required additional record searches to determine the types of waste managed by the septic systems. Additional records sources consisted of the annual condition maps of the Base from previous years, additional construction drawings, floor plans and demolition plans from the Base Facilities office and Real Property Office, and additional drawings and plans from the Air Station Facilities and Property office. Further records were obtained from the Installation Development Office and the Base Maintenance Office. These records included property disposal records, active property records, facility deficiency reports, maintenance records and work orders. Additional records for UN140, located at former Building 45 were obtained from previous reports by Baker Environmental, Inc., 2002 and OHM Remediation Services, Corp., 2003 (see references). Site visits were conducted at each of the sites, with the exception of UN236, which was located under the current Rapid Refueling Facility at the MCAS.

A combined SWMU Assessment Report was generated for the five sites listed below.

AS149	Septic tank system at AS143
UN1270	Septic tank system at UN1187
UN140	Septic tank system at former Building 45, (OU 19, Site 84)
UN232	Septic tank system at former Building FC19
UN236	Septic tank system at former Building AS536

Site Name:**SEPTIC TANK SYSTEM – AS149, BUILDING AS143****Unit Description**

Facility number AS149 is the septic tank and drain field system that served Building AS143, the filling station at the New River Marine Corps Air Station (MCAS). The septic system and Building AS 143 are located at the northeast corner of White Street and Campbell Street (Figure 2). The septic tank system is located immediately northeast of Building AS143, and property records show it to be active. However, Air Station records indicate that Building AS143 has been connected to the sanitary sewer system.

Building AS143 was built in 1960 as a filling station building where MCAS vehicles are re-fueled. The floor plan of AS143 (see Appendix) indicates that the septic system supported restroom facilities and a small shower area for the station attendants. The station does not support any type of maintenance or repair activities and does not contain any facilities for those activities.

The septic system consists of a 1,000-gallon septic tank and drain lines of unknown dimensions. No drawings were located showing the exact layout and dimensions of the septic system; however, floor plan drawings show the only plumbing fixtures to be for sanitary purposes. As a result of the file review conducted in December 2005 and January 2006, sanitary waste appears to be the only waste managed by this septic system.

General Dimensions

1,000-gallon tank, unknown drain line dimensions

Start Date

1960

Closure Date

Building AS 143 is active.

Current property records indicate that septic system (AS149) is active.

Waste Managed

Sanitary waste.

History of Release

N/A

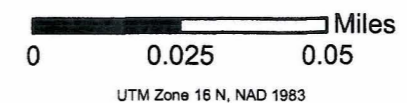
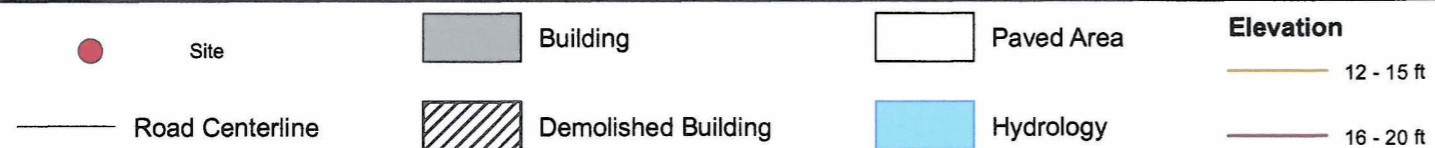
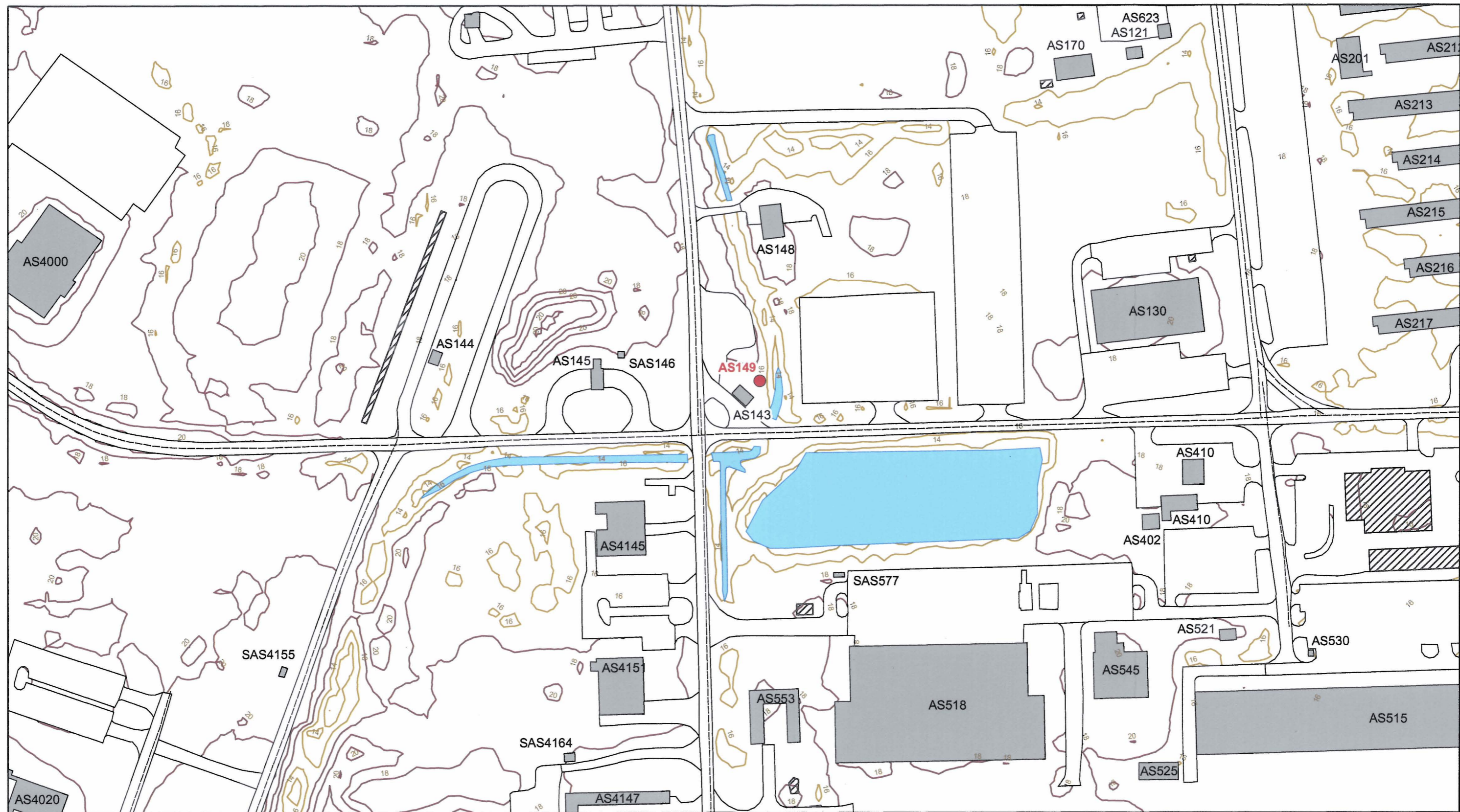


Figure 2
Location Map AS 149 (AS 143)
Camp Lejeune Marine Corps Base
North Carolina

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Site Name:**SEPTIC TANK SYSTEM – UN1270, (UN1187, Devil Dog)****Unit Description**

Facility number UN1270 is the septic tank and drain field system that supported limited activities at facility UN1187 (Camp Devil Dog). Camp Devil Dog (CDD) is an infantry training school facility with minimal accommodations, most of which are primitive. UN1270 is located at the northeast corner of Command Post Road and north of the parking lot at the command post area of CDD (Figure 3). The septic system is no longer in use, although property records show it to be an active facility. The system was used to support a mobile command post restroom facility. The mobile command post was installed in a semi-permanent position at the Camp. No floor plans of the mobile facility were available.

Currently, CDD facilities are supported by the sanitary sewer system and a lift station and forced main. The system is supplemented with portable toilets at various locations where plumbing is not available.

The abandoned septic tank system consists of a 1,200 gallon septic tank and a distribution system of unknown dimensions. The septic tank and drain lines were not removed in conjunction with removal of the mobile command building. No records have been found that indicate removal of the system since that time, however, part of a broken concrete septic tank lid was observed during a site inspection. The broken lid suggests that the tank may have been destroyed, removed, or filled with soil.

As a result of the file review conducted in December 2005 and January 2006, and a site inspection conducted in January 2006, sanitary waste appears to be the only waste managed by this septic system.

General Dimensions

1,200-gallon tank, drain line dimensions unknown

Start Date

1992

Closure Date

Unknown

Waste Managed

Sanitary waste.

History of Release

N/A

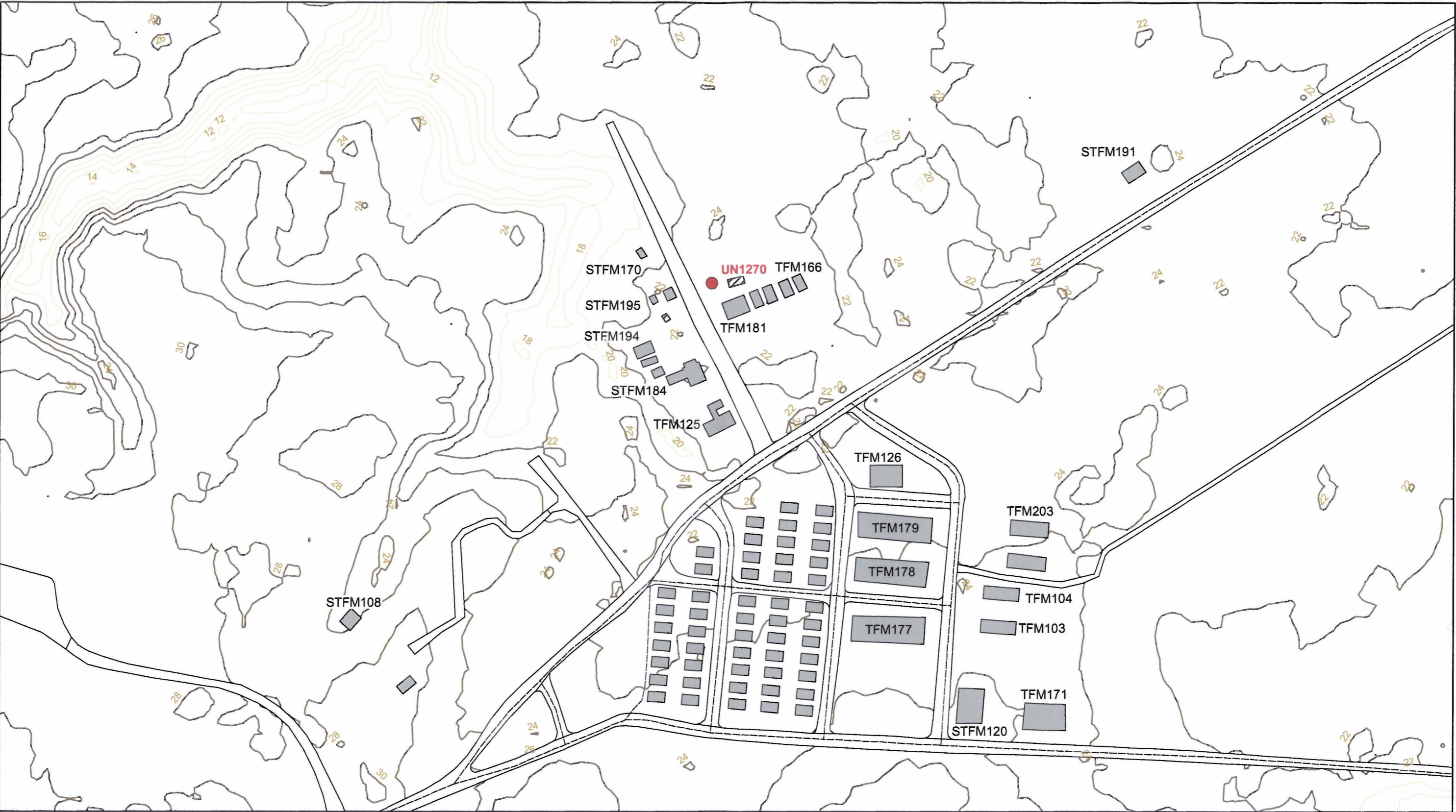


Figure 3
Location Map UN1270 (UN187)
Camp Lejeune Marine Corps Base
North Carolina

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File Path: C:\Rice\Lejeune_IR\Rice\Figure_3_UN1270.mxd, Date: January 24, 2006, User: CRICE

Site Name:

SEPTIC TANK SYSTEM – UN140, BUILDING 45 - (OU19, Site 84)

Unit Description

Facility number UN140 is the septic tank and drain field system that supported Building 45, the former electrical powerhouse (later the heavy vehicle maintenance building) at MCB Camp Lejeune. UN140 is located approximately 200 yards south of Marine Boulevard (NC Route 24) and one mile west of the main gate of Camp Lejeune (Figure 4).

Building 45, formerly located at the site, served as the Base power supply from approximately 1942 until 1965. The septic system consisted of a septic tank (unknown volume) and drain lines of unknown dimensions. The septic system is located approximately 50 feet west of former Building 45 and immediately east of a former large fuel oil Above-Ground Storage Tank (AST) (Figure 5). After completion of electrical transmission lines into the area, a substation was constructed near Building 45 and the building was converted for use as the Base heavy vehicle maintenance facility. The building served as a maintenance facility from 1965 until the early 1990s. Floor plans of the building appear to show that only restroom facilities and a kitchen area drained to the septic system. However, there were several renovations to the building and other facilities within Building 45 may have been connected as well (see Appendix). Building 45 was demolished in 1999, with the exception of the basement, which was demolished in 2002. The facility is currently surrounded by a fence with a locking gate.

The site is currently included in the Installation Restoration (IR) Program and is referred to as Operable Unit (OU) 19, Site 84. Site investigation activities began in 1995 and remediation activities are ongoing.

The RI field investigation was completed in 2001. The findings from the RI concluded that soils around the former Building 45 location and areas to the west were impacted by organic compounds (primarily PCBs, pesticides and PAHs) and metals. Limited groundwater contamination is present in the surficial aquifer, including petroleum constituents, pesticides and metals. Shallow soils and sediment were also impacted, primarily with PCBs.

Interim Removal Response Actions (IRA) were performed from 2002 through 2003. Actions included removal of the Building 45 basement and foundation, including the surrounding soils. Shallow soil excavation and disposal activities were also carried out over a large area of the site. Site assessment and remediation activities are ongoing at the site.

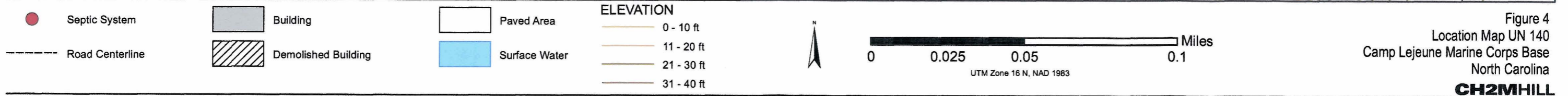


Figure 4
 Location Map UN 140
 Camp Lejeune Marine Corps Base
 North Carolina
CH2MHILL

General Dimensions

Unknown

Start Date

1942

Closure Date

1999

Waste Managed

Sanitary waste and potentially industrial waste

History of Release

No recorded releases from septic system

Site Name :

SEPTIC TANK SYSTEM – UN232, BUILDING FC19

Unit Description

Facility number UN232 is the septic tank and drain field system that supported Building FC19 at the entrance to the former Base sanitary landfill at Camp Lejeune. UN232 is located north of the entrance road to the former landfill area, and east of Sneads Ferry Road, approximately two miles from the intersection of Holcolm Boulevard (Figure 6).

Building FC19 was built in 1971 as the sanitary landfill Operations Building. The abandoned septic tank system is located immediately northwest of Building FC19 and consists of a grease trap, a manhole, a septic tank (unknown volume), a distribution box and 4 drain lines. Drawings show that the drain lines were approximately 100 feet in length and spaced 10 feet apart (Figure 7). The septic tank and drain lines were not removed in conjunction with the building demolition in 1999. Available records do not indicate removal of the system since that time.

The building contained an office space, a restroom facility with a shower and a garage area. The garage area contained a high pressure pumping system equipped with a hypochlorinator (see Appendix). High pressure water was distributed to two hydrants located at a concrete wash apron southeast of the building, where refuse trucks were apparently washed out with high pressure hoses. Runoff from the wash pad was directed into a drain system that fed through a grease trap prior to entering the septic tank and drain field system. Waste water from the restroom facilities discharged to the same septic system downstream of the grease trap.

Building FC19, along with the associated asphalt and concrete wash pad was demolished in 1999 when the landfill was closed. According to the demolition plans, the water and sewer pipes were capped approximately five feet from the building and the underground structures were left in place.

Currently, the site is unoccupied and overgrown. A gate is present across the paved access road, which remains in place.

As a result of the file review conducted in December 2005 and January 2006, both sanitary and industrial wastes appear to have been managed by this septic system.

General Dimensions

220 feet in length by 50 feet in width

(includes area of the building, washpad, septic tank and drain lines)

Start Date

1971



Figure 6
Location Map UN 232
Camp Lejeune Marine Corps Base
North Carolina
CH2MHILL

Closure Date

Building demolished in 1999

Waste Managed

Sanitary waste, potentially industrial wastes from refuse truck washing operations.

History of Release

No recorded releases from septic system

Site Name:**SEPTIC TANK SYSTEM - UN236 BUILDING AS536****Unit Description**

Facility number UN236 is the septic tank and drain field system that supported Building AS536 at the MCAS-New River Air Station area of Camp Lejeune. UN236 is located at the former aircraft direct refueling facility, located on the northwest side of the northeast-southwest runway (Figure 8).

Base property and maintenance records show that Building AS536 was constructed in 1970 as a public toilet for Air Station personnel at the refueling area. The septic system consists of a 1,000 gallon septic tank and three drain lines approximately 135 feet long with 10 foot spacing between lines. The system was constructed in a grass area immediately northeast of AS536 (Figure 9). Floor plan drawings for Building AS536 show that the facility was used only for restroom facilities (see Appendix).

Building AS 536 was demolished in 1990 during construction of the new Aircraft Rapid Refueling Station. During construction, all structures in the immediate area were demolished and the area was re-graded. Records indicate removal of the septic tank during construction, but make no reference to the status of the drainfield. As a result of the file review conducted in December 2005 and January 2006, sanitary waste appears to be the only waste managed by this septic system.

General Dimensions

225 feet in length by 75 feet in width

(includes area of the building, septic tank and drain field).

Start Date

June 1970

Closure Date

August 1990

Waste Managed

Sanitary waste

History of Release

No recorded releases from septic system

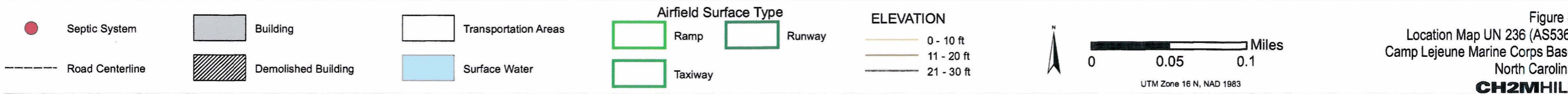
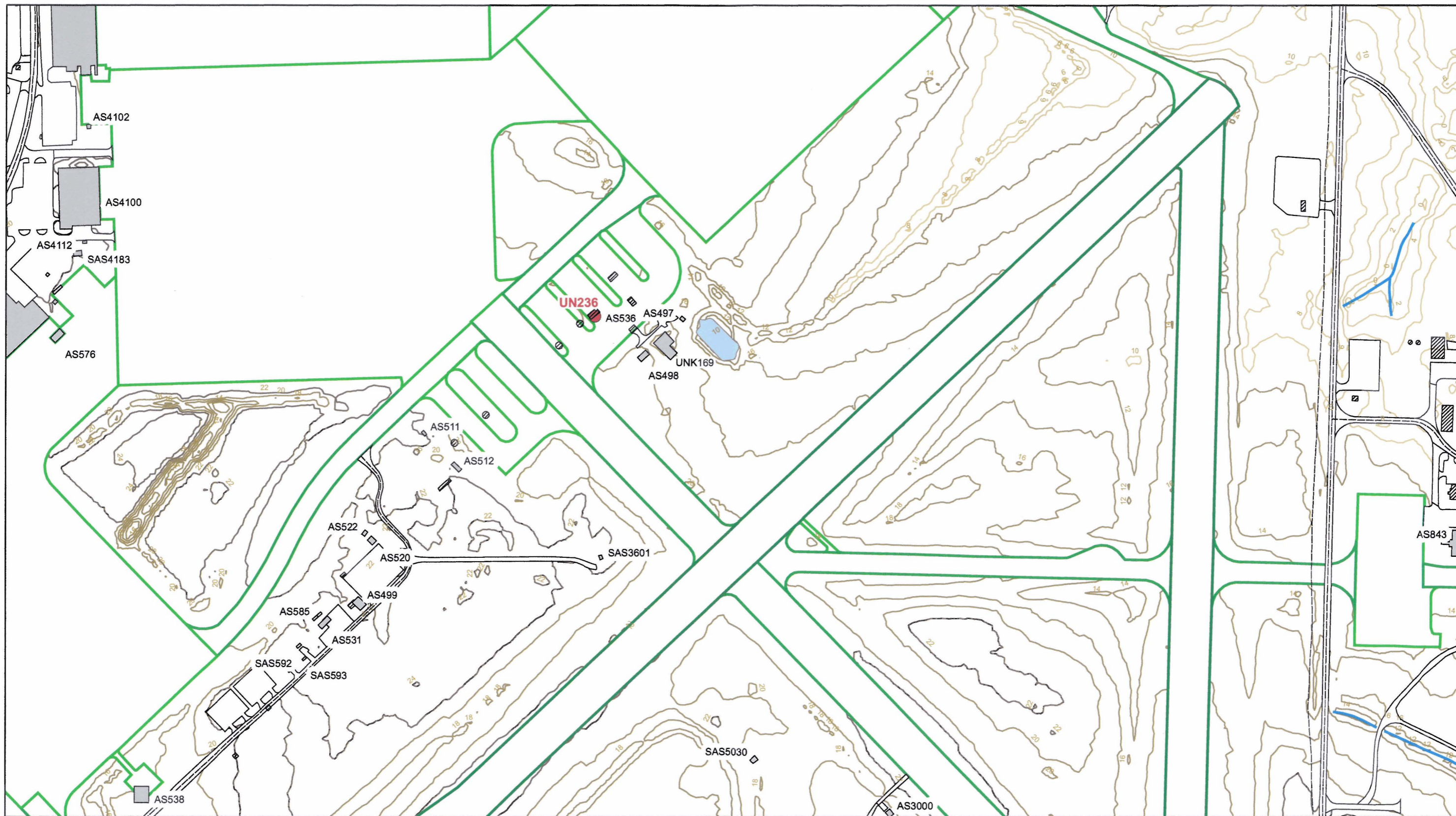
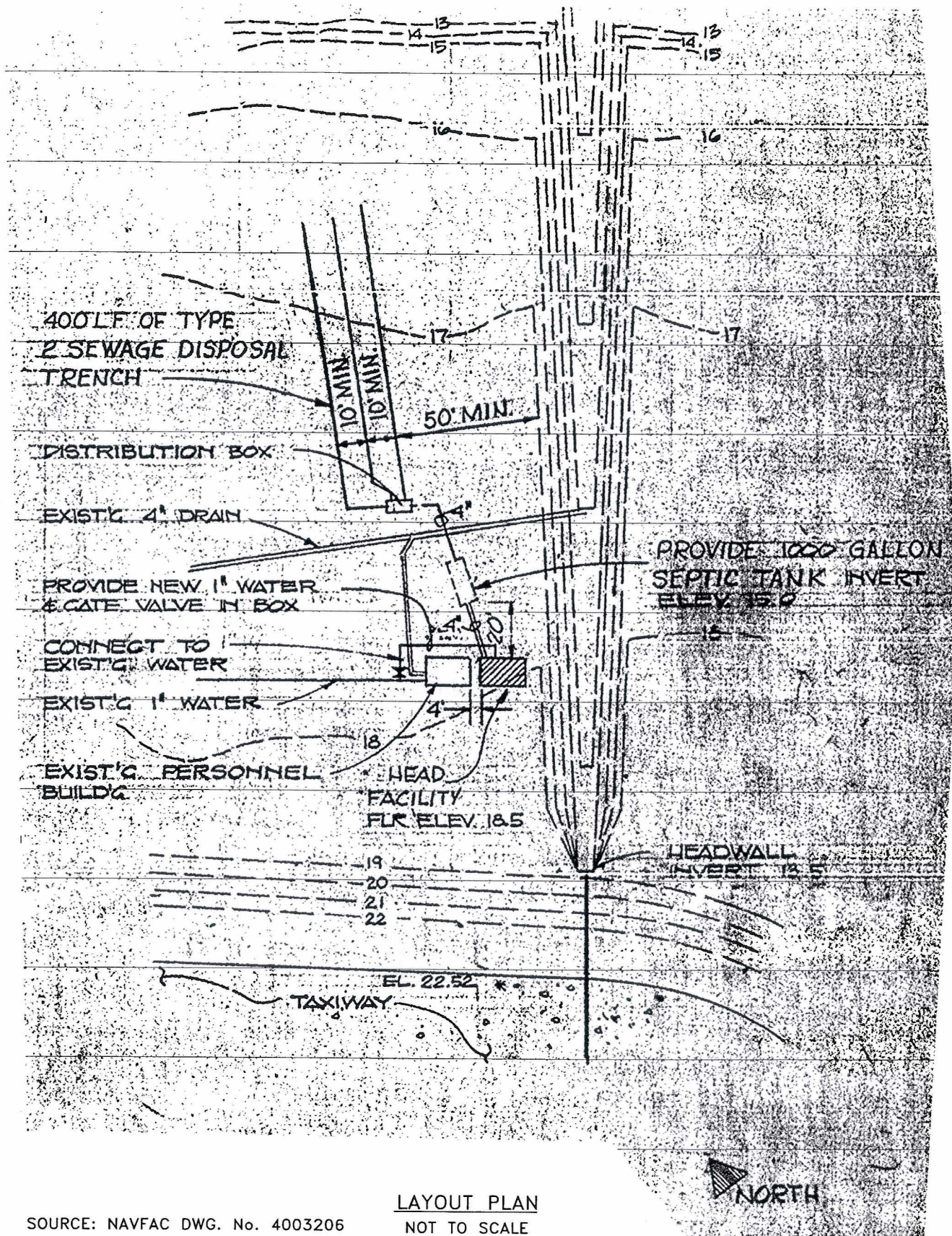


Figure 8
 Location Map UN 236 (AS536)
 Camp Lejeune Marine Corps Base
 North Carolina
CH2MHILL



LAYOUT PLAN
NOT TO SCALE

SOURCE: NAVFAC DWG. No. 4003206

FIGURE 9
UN236 (AS536) SITE PLAN
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

CH2MHILL

5.0 Recommendations

Based upon the file review, 51 of the 56 septic tanks under consideration were clearly used only for sanitary waste disposal and warrant no further effort. Five septic tank sites had insufficient data available to make an immediate determination of their past use and required further, more detailed investigation.

Based upon the more detailed records search and review, and a visual site investigation at the five sites at MCB Camp Lejeune, the following recommendations are suggested:

Site AS 149 - Septic Tank System Near Building AS 143

Because the septic tank system near Building AS143 managed only sanitary waste, no further action is recommended for this site.

Site UN 1270 - Septic Tank System Near UN 1187

Because the septic tank system near UN 1187 (Camp Devil Dog) managed only sanitary waste, no further action is recommended for this site.

Site UN140 - Septic Tank System Near Former Building 45

Because the septic tank system near Building 45 may have managed other waste besides sanitary waste from Building 45, additional assessment activities would have been recommended for this Site. However, the former Building 45 area has been in the IR program since 1998 and the ongoing assessment and remediation of the site includes the former septic system area. Therefore, no additional action is recommended regarding the septic system.

Site UN232 - Septic Tank System Near Former Building FC19

Because the septic tank system may have managed waste other than sanitary waste from Building FC19 and the associated washpad, a Confirmatory Site Investigation is recommended at this site. This site will be named SWMU 476, Old Landfill Septic Tank/Leachfield.

Site UN236 - Septic Tank System Near Former Building AS536

Because the septic tank system near Building AS536 managed only sanitary waste, no further action is recommended for this site.

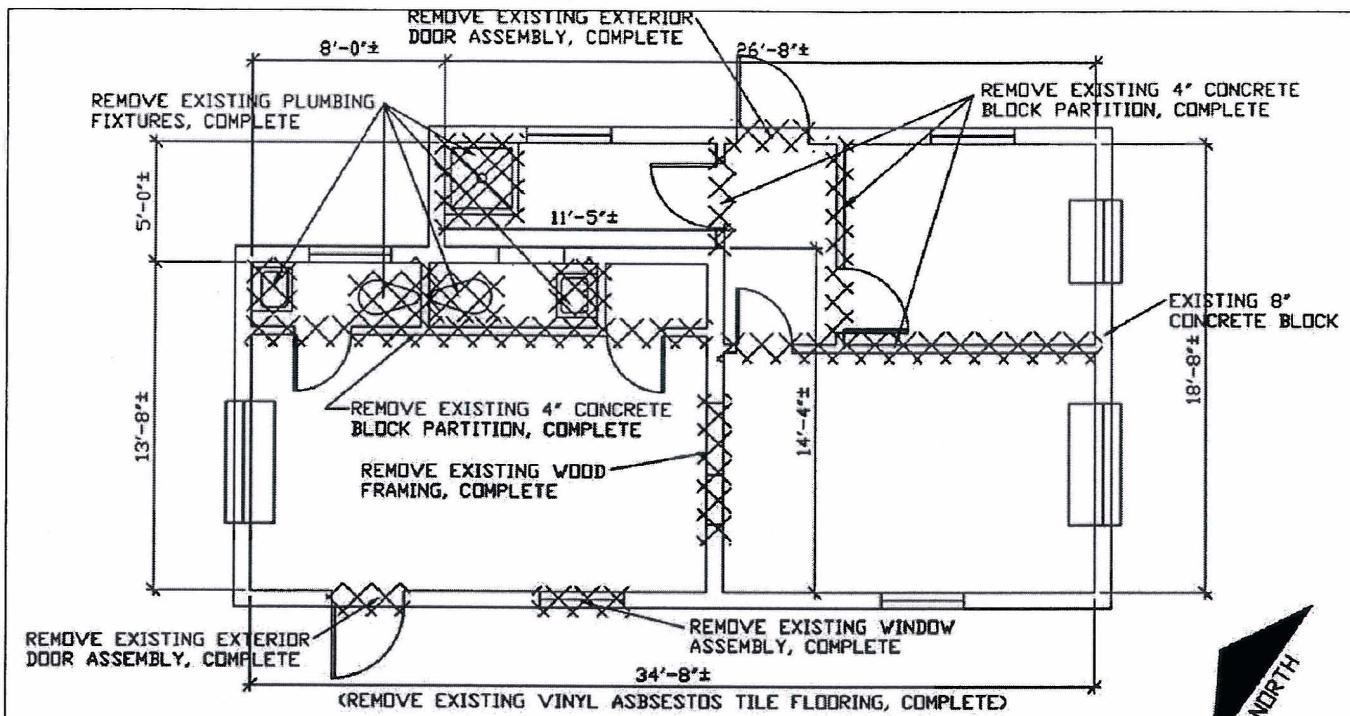
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Appendix

Supporting Building Drawings



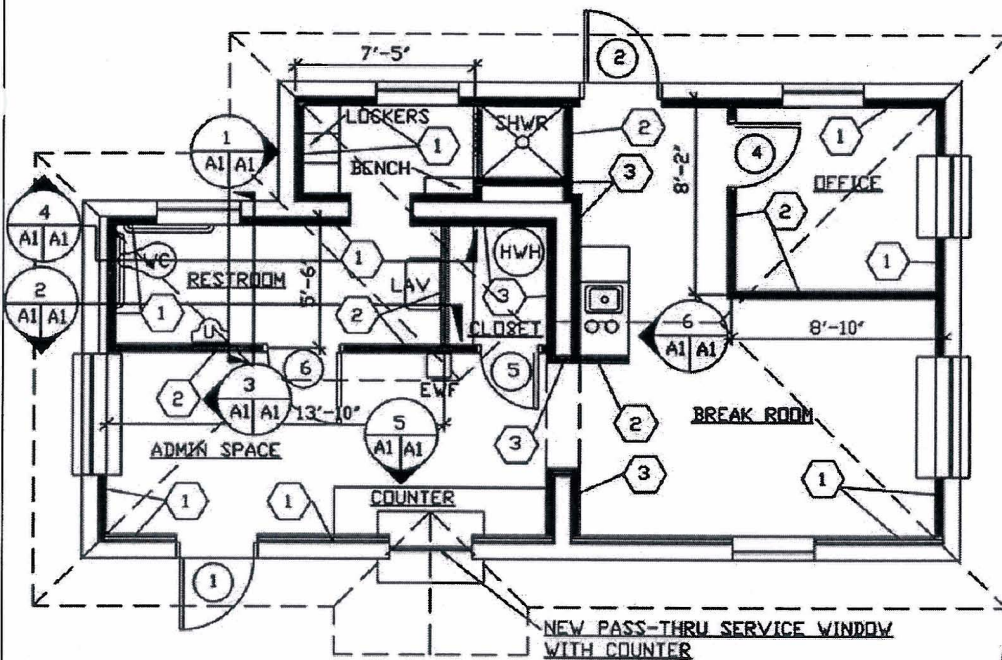
GAS STATION FLOOR PLAN - BUILDING AS143

(EXISTING CONSTRUCTION AND DEMOLITION)

SCALE 1/4" = 1'-0"

NOTE:

SEE NAVFAC DRAWING NUMBER 4080730 FOR EXISTING CONDITIONS.



GAS STATION FLOOR PLAN - BUILDING AS143

(NEW CONSTRUCTION)

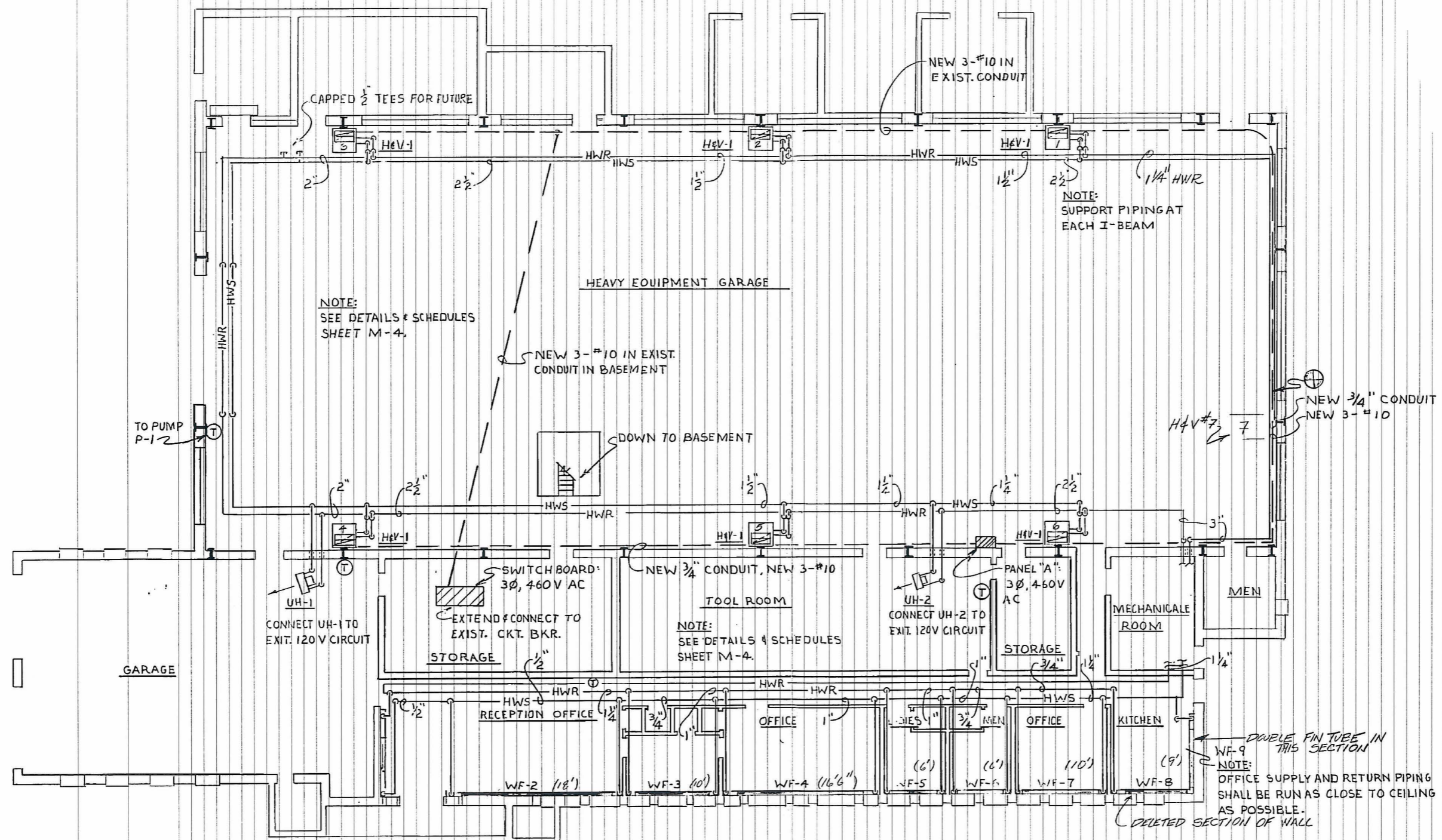
SCALE 1/4" = 1'-0"

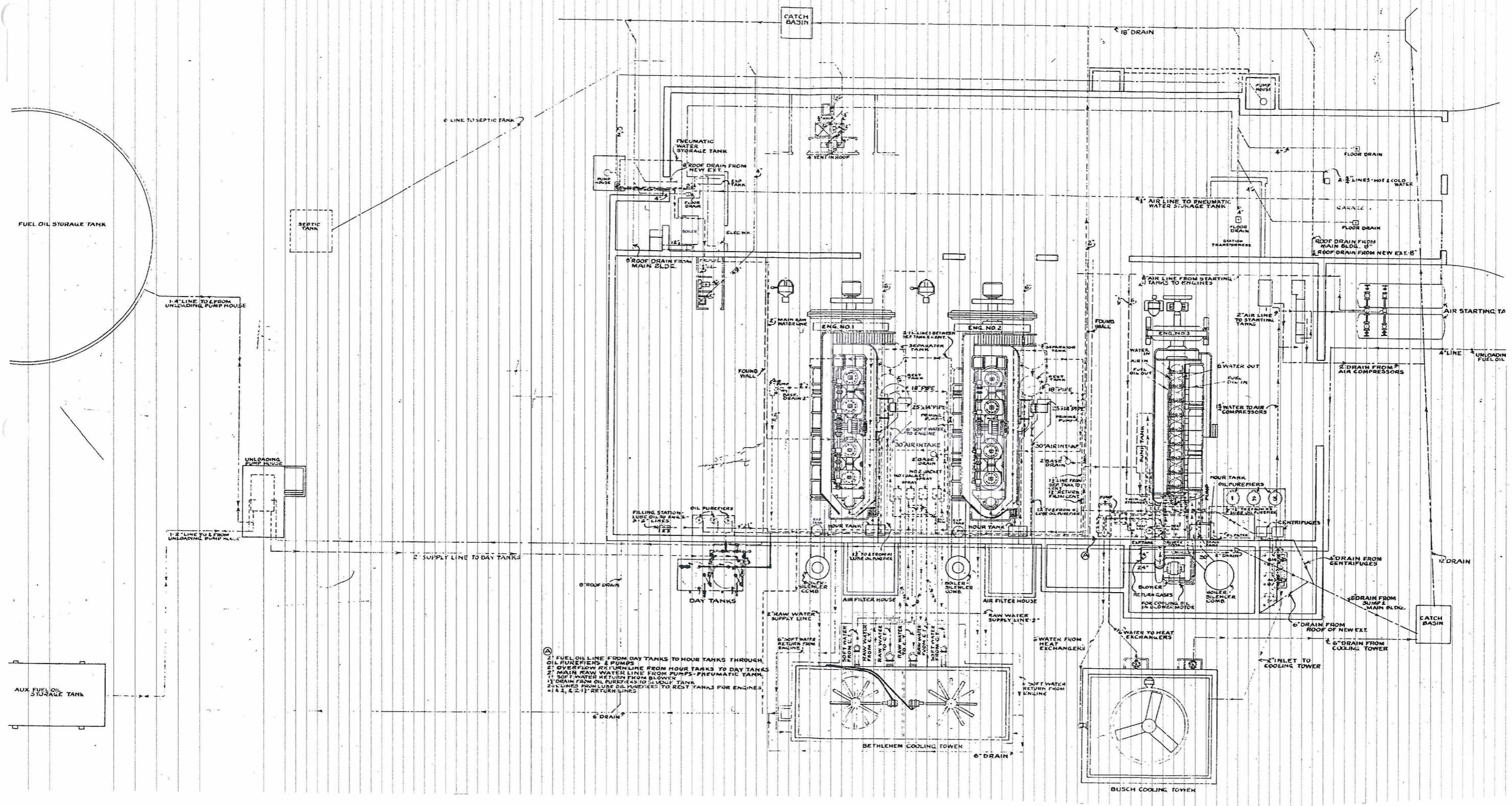
NOTE:

PROVIDE NEW ALUMINUM SLIM-LINE BLINDS

SOURCE: NAVFAC DWG. No. 4542664

CH2MHILL





PIPING PLAN
NOT TO SCALE

UN232 (FC19)

